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EXAMINER	
MENDEZ, ZULMARIAM	
ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,009	ROINER, FRANZ	
	Examiner	Art Unit	
	ZULMARIAM MENDEZ	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 8-10, 12 and 14-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sampson (EP 0 650 929).

With regard to claims 1-5, Sampson discloses an electrolytic process for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising the steps of arranging a liquid to be electrolytically treated, such as water (page 4, lines 13-21) between a cathode (14) and an anode (12), arranging an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) and directly between the cathode (14) and the anode (12) without any intervening membrane; (see figure 1; page 3, lines 48-55; thus, the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the electrodes), adhering to an ion exchanger present in the liquid one or more gases, such as hydrogen and oxygen by an ionic circuit, (figure 1, page 3, lines 1-38 and 42-47; page 6, lines 41-50).

With regard to claim 6, Sampson teaches wherein the ion exchanger is an acid ion exchanger (page 5, lines 22-27).

With regard to claim 8, Sampson discloses wherein the ion exchanger comprises

a matrix, active groups and ions to be exchanged (page 6, lines 41-50).

With regard to claims 9 and 10, Sampson teaches wherein the ion exchanger contains catalytically acting substances (page 3, lines 42-55).

With regard to claim 12, Sampson discloses wherein the ion exchanger is kept in suspension in the liquid (page 4, lines 13-17; figure 2).

With regard to claim 14, Sampson teaches wherein the method is carried out in multiple stages (page 11, lines 15-38).

With regard to claim 15, Sampson discloses an electrolytic process for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising a container/reactor (20), a liquid, such as water within the container (page 4, lines 13-21), an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) to which one or more gases to be produced adheres by an ionic circuit (figure 1; page 3, lines 1-38 and 42-47; page 6, lines 41-50); and a positive electrode (22) and a negative electrode (24; see figure 2) in the container structured and arranged to be connected to a power source/external circuit shown in figure 2; and with the ion exchanger (16) directly between the cathode (14) and the anode (12) without any intervening membrane (see figure 1; page 3, lines 48-55; Thus, the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the elctrodes).

With regard to claim 16, Sampson teaches wherein an electrode is tubular in design (page 5, lines 6-12).

With regard to claim 17 and 19, Sampson discloses wherein a filler material is

present (page 5, lines 13-58) inside the tubular electrode in the liquid containing the gas to be produced and a substance to which the era gas to be produced adheres (figure 2 shows ion exchange material 26, 28 within the system).

With regard to claims 18 and 20, Sampson teaches wherein an acid is present in the filler material (page 5, lines 22-27).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson, as discussed above, in view of Schirmann (EP 0 237 402).

With regard to claim 7, Sampson discloses an electrolytic process for oxidizing or reducing species in dilute aqueous solutions (abstract) comprising the steps of arranging a liquid to be electrolytically treated, such as water (page 4, lines 13-21)

between a cathode (14) and an anode (12), arranging an electrically non-conductive ion exchanger (16), the ion exchanger disposed within the liquid (page 3, lines 42-47) and directly between the cathode (14) and the anode (12) without any intervening membrane (see figure 1; page 3, lines 48-55; the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the electrodes), adhering to the ion exchanger present in the liquid one or more gases, such as hydrogen and oxygen by an ionic circuit (figure 1; page 3, lines 1-38 and 42-47; page 6, lines 41-50), but fails to disclose wherein the ion exchanger is of gel-like form. However, Sampson teaches wherein the particle ion exchange material can be an oxidizing exchanger, i.e. a cation exchange resin, or a reducing exchanger, i.e. anion exchange resin (page 5, lines 23-25). It is well known in the art wherein ion exchange resins may be in provided in a gel-like form, as evidenced by Schimann.

Schimann discloses a process and apparatus for the production of gases wherein an aqueous medium is subjected to the action of an ion exchange resin selected from acidic gel type ion exchange resins which are stable in the aqueous medium at high temperatures (abstract). Therefore, one having ordinary skill in the art would have found it obvious to modify the ion exchange resin type, i.e. in the form of gel, as taught by Schimann, because they are stable in aqueous medium at high temperatures.

6. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson, as discussed above, in view of Tokuyama (JP 59092028).

With regard to claims 11 and 13, Sampson discloses all of the limitations, as discussed above but fails to teach wherein the ion exchanger is kept in motion and is supplied continuously.

Tokuyama teaches a method and apparatus for the treatment of a liquid in which an ion exchange resin is immersed in said liquid to be treated is supplied continuously and kept in motion (see arrows indicating movement of the liquid to be treated, which flow into the tank containing the ion exchange resins and would also cause motion of the resins - in figure 1) in order to enhance contact efficiency of a liquid to be treated (abstract). Therefore, one having ordinary skill in the art at the time of the invention would have found it obvious to modify the method of Sampson by imparting motion to the ion exchanger resins, as taught by Tokuyama, in order to enhance contact efficiency of a liquid to be treated.

Response to Arguments

7. Applicant's arguments filed on April 5, 2010 have been fully considered but they are not persuasive. The applicant argues the following:

a. Unlike the prior art made of record, the instant invention does not require a membrane. Thus, it is possible to arrange the ion exchanger in communication with both the anode and cathode in the electrolytic liquid.

In response, the examiner respectfully disagrees. Sampson discloses an ion exchanger (16) placed directly between the anode (12) and the cathode (14) without any intervening membrane (see figure 1).

b. Sampson is directed to oxidizing or reducing inorganic and organic pollutants from aqueous solutions and is not directed to generating hydrogen and/or oxyhydrogen.

In response, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

c. Sampson teaches electrically conductive ion exchange materials, whereas the present invention requires an electrically non-conductive ion exchanger. However, it is noted that Sampson discloses wherein the ion exchanger (16) is in direct contact with the anode (12) and cathode (14) without any intervening membrane. Therefore, the ion exchanger is inherently made of a non-conducting material to avoid short circuit between the electrodes in the embodiment shown in figure 1 of Sampson.

d. Tokuyama states the ion exchange resin particles in container (4) are floated but not necessarily fluidized; the arrows in the figure denote recirculating fluid flow and not movement of ion exchange resin.

In response, the examiner does not find this argument persuasive. As shown in figure 1, Tokuyama teaches wherein a liquid to be treated is disposed in a treating tank (2) and a reticulated or a porous container (4) having a predetermined amount of ion exchange resins (3). A proper recirculation stream means is provided within the tank (2) and into container (4) through the porous

material. Therefore, the motion imparted by the liquid to be treated, would also cause movement of the ion exchange resin (3), which meets the claimed limitation of "wherein the ion exchanger is kept in motion".

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Tuesday-Friday from 9am to 7pm.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

/Z. M./
Examiner, Art Unit 1795